U.S. Department of Transportation

Intelligent Transportation Systems Standards Fact Sheet

NTCIP 2303

April 2002

National Transportation Communications for ITS Protocol (NTCIP) – Application Profile for File Transfer Protocol

Overview

The National Transportation Communications for Intelligent Transportation System (ITS) Protocol (NTCIP) is a family of standards that provides both the rules for communicating (called protocols) and the vocabulary (called objects) necessary to allow electronic traffic control equipment from different manufacturers to operate with each other as a system. The NTCIP is the first set of standards for the transportation industry that allows traffic control systems to be built using a "mix and match" approach with equipment from different manufacturers. Therefore, NTCIP standards reduce the need for reliance on specific equipment vendors and customized one-of-a-kind software. To assure both manufacturer and user community support, NTCIP is a joint product of the National Electronics Manufacturers Association (NEMA), the American Association of State Highway and Transportation Officials (AASHTO), and the Institute of Transportation Engineers (ITE).

The NTCIP family of standards is a joint project of the following standards development organizations:

American Association of State Highway and Transportation Officials (AASHTO)

Institute of Transportation Engineers (ITE)

National Electrical Manufacturers Association (NEMA)

(Contact information is shown at the end of this fact sheet)

To obtain a copy of this standard, please contact:

Global Engineering Documents
Web site: http://global.ihs.com

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Prior to the establishment of the NTCIP, traffic management centers used a number of proprietary protocols to exchange information with field devices such as traffic signal controllers and dynamic message signs. The goal of all NTCIP standards is to identify a common set of non-proprietary communications protocols that address requirements for center-to-center and center-to-field communications and promote interoperability.

What is this standard for?

This standard, **NTCIP 2303 – Application Profile for File Transfer Protocol**, combines various base standards and protocols into a coordinated set of functions and procedures related to large file transfers. It specifies a subset of features that must be supported by all implementations of the profile. It also specifies the requirements for the implementation of a full-featured file transfer mechanism in transportation-related devices and traffic management centers and it describes requirements for interactive access, formatting data, and authentication control. It adapts an Internet standard (IAB STD 9 – RFC 959:1985, File Transfer Protocol) to transportation.

This standard specifically addresses functions and services at layers 5 (session), 6 (presentation), and 7 (application) of the Open Systems Interconnection (OSI) Reference Model (ISO/IEC 7498-1). The OSI seven-layered model describes the basic functions and services of a communication protocol.

Who uses it?

This standard should be used by equipment manufacturers, systems integrators, and transportation agency personnel. Manufacturers and integrators should understand the specific implementation and operational requirements that it defines. Specification writers and acceptance testers can also find this standard useful, since it defines a profile implementation conformance specification (PICS). Manufacturers, integrators, and users can use this standard as:

a. A checklist to reduce the risk of failure to conform to the standard through oversight;
b. A detailed indication of the capabilities of the implementation;
c. A basis for initially checking the possibility of inter-operating with another implementation; and
d. The basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

How is it used?

This profile is used to define the rules and procedures for exchanging large files, between two entities, and is intended primarily for center-to-field applications. In many center-to-field applications, field devices may not support full file and directory services and the functionality required by this standard. In such cases, the NTCIP 2302 (Application Protocol for Trivial File Transfer Protocol) standard should be used.

Scope

This standard specifies a set of features and a combination of standards and protocols applicable to file exchange in a system. It is applicable to transportation devices and management systems that operate in a variety of transportation applications. Finally, it specifies requirements for the application, presentation, and session layers of the OSI Reference Model.

Related documents

To accommodate the broad scope of this standardization effort, the NTCIP standard has been divided into numerous individual standards. A detailed list of related documents is available on the **NTCIP 9001 – NTCIP Guide** fact sheet. (The NTCIP Guide is available on-line at www.ntcip.org).

IAB STD 3 – RFC 1122: 1989, Internet Architecture board (IAB) Requirements For Internet Hosts - Communication Layers, RFC 1123: 1989, Requirements for Internet Hosts - Application and Support

IAB STD 9 – RFC 959:1985, IAB File Transfer Protocol (FTP)

ISO/IEC 7498-1:1994 – Information technology - Open Systems Interconnection, Basic Reference Model: The Basic Model

ISO/IEC TR 10000-1:1995 – Information Technology - Framework and Taxonomy of International Standardized Profiles, Part 1: General principles and documentation framework

NTCIP 2302 – Application Protocol for Trivial File Transfer Protocol

NTCIP 8003 – Profile Framework

American Association of State Highway and Transportation Officials (AASHTO)
444 N. Capitol Street, NW
Washington, DC 20001
Tel: (202) 624-5800 Fax: (202) 624-5806
Web site: www.aashto.org

Institute of Transportation Engineers (ITE)
1099 14th Street NW Suite 300 West
Washington, DC 20005
Tel: (202) 289-0222 x 131
Fax: (202) 289-7722
Web site: www.ite.org

National Electrical Manufacturers Association (NEMA)
1300 North 17th Street
Arlington, VA 22209
Tel: (703) 841-3200 Fax: (703) 841-3300
Web site: www.nema.org